FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendments of Parts 21 and 94 of	)	
the Commission's Rules to Establish a	)	RM-
Channel Plan and Technical Rules for	)	
the 37.0-38.6 GHz Band	)	

PETITION FOR RULEMAKING

The Fixed Point-to-Point Microwave Section of the Telecommunications Industry Association ("the Section") requests the adoption of a channel plan and technical rules for the 37.0-38.6 GHz band. This is needed so that PCS operators, cellular operators and other common carriers and private operators can use this frequency band to satisfy fixed point-to-point communications needs. Expedited action is needed on this petition so that PCS operators will have this critical spectrum available to them in a timely manner.

Introduction

This petition is submitted to correct an oversight in the Commission's Rules and to permit the use of radio spectrum that has lain fallow and will continue to lie fallow, absent the requested action. The 37.0-38.6 GHz band is shown in the Commission's Table of Allocations (Section 2.106 of the

Commission's Rules) as allocated for use under Parts 21 and 94, but Parts 21 and 94 do not contain any channel plan or other rules to govern such use. There cannot be any use of this band by Part 21 or 94 eligibles until this oversight is corrected. (As discussed below, this band is also allocated for Government use on a co-equal basis, but the Federal Radio Frequency Management Manual does not appear to contain any channel plan, either.)

Interest of the Section

The Fixed Point-to-Point Microwave Section of the Telecommunications Industry Association represents the manufacturers of microwave radio equipment. As the Commission is aware, the Section has recently contributed its experience and expertise in developing sharing rules for 2 GHz PCS operators and microwave licensees (Bulletin 10F), and has participated actively in many other FCC proceedings. The Section is deeply involved in the evolving regulatory structure for fixed wireless communications, including the possible merging of Parts 21 and 94 of the Commission's Rules. In this regard, the Section prepared and submitted earlier this year a comprehensive 50 page proposal, as part of the Commission's "re-inventing government" initiative, that could lead to the harmonization of the regulatory structure for fixed microwave communications. For having been involved in providing support microwave networks for mobile and cellular systems for many years, most of the Section members have intimate knowledge of cellular and PCS needs in terms of fixed infrastructure. Consequently, we are well-situated to offer our proposal to improve the regulations applicable to the 37.0-38.6 GHz band.

Experience with the 38.6-40.0 GHz Band

Recent experience the 38.6-40.0 GHz band confirms that there is a demand for additional spectrum in this frequency range. The Commission is currently faced with numerous applications, many of which are mutually exclusive with one another, for the fourteen channel pairs at 38.6-40.0 GHz.

The specific features that make this frequency range valuable are the Commission's wide area licensing approach, and the relatively short propagation distances that are available. The wide area licensing approach allows a licensee to deploy and operate individual links without the cost and time delay of individual licensing and traditional frequency coordination. The licensee can subdivide its assigned channel, and can reuse its channel virtually without limitation in its designated service area. The short propagation distances means that a subchannel could be reused many times within a metropolitan area.

This evident demand for the 38.6-40.0 GHz has arisen relatively recently, for several reasons. First, the band has begun to see use in Europe to interconnect PCS cell sites. For example, in the past year one U.S. manufacturer alone has supplied over 500 transmit/receive radios to Mercury One/2/One for use in London to interconnect PCS cell sites. As the Mercury network evolves, additional 38 GHz links will be installed to reuse these frequencies. Thus, there is real practical experience with the 38 GHz band, including experience that confirms the feasibility of frequency reuse.

Second, this European demand has stimulated manufacturers to reduce the costs of their 38 GHz products. Thus, a single transmit/receive pair of radios, carrying a capacity of four T1 data streams, can be purchased for less than $20,000. This cost is lower than at most other frequency bands.

Third, the United States is also planning to issue licenses for PCS systems, probably in 1995. The FCC plans to issue six licenses per area for PCS. The 38 GHz band is ideal for interconnecting PCS cell sites and other PCS uses (such as base station to base station connections or base to switch links), because of the short propagation distances and the ability of the licensee to deploy links without the cost and delay of individual licensing.

Fourth, cellular licensees have recently expressed a great deal of interest in using 38 GHz to interconnect cell sites. Cellular systems have matured to the extent that cell sites are now much closer to one another than previously. In the past, 2 GHz was the frequency band of choice to interconnect cell sites. Then, interest moved to the 18 GHz and 23 GHz bands. Now, we expect to see a substantial interest by cellular operators in the 38 GHz band.

Finally, as confirmed by the pending 38 GHz applications before the Commission, a new group of local microwave common carriers has evolved. These carriers would expect to provide "last mile" services to PCS operators and to private companies that might need high bandwidth links between and among offices.

In light of this experience, it seems clear that the 38.6-40.0 GHz band will not be adequate to satisfy the demands for such uses, and that the partial channelization of the band should be extended to cover the 37.0-38.6 GHz band as well.

Current Allocation of the 37.0-38.6 GHz Band

The 37.0-38.6 GHz band is already allocated for Fixed service on a primary basis. Consequently, there is no need to change Part 2 of the Commission's Rules.

Government Use

The 37.0-38.6 GHz band is currently allocated for both Government and non-Government use on a co-equal primary basis. We do not propose to change that allocation. Use of the band should be governed by the current requirement that now applies to 38.6-40.0 GHz: "These frequencies shall be assigned only where it is shown that the applicant will have a reasonable projected requirement for a multiplicity of service points or transmission paths within the area." Sections 21.701(j) and 94.61, footnote 18. To the extent that a Government agency has such requirements, it should be eligible to use these frequencies.

Proposed Channel Plan and Technical Rules

We propose a channel plan for 37.0-38.4 GHz that incorporates the same 700 MHz transmit/receive channel spacing as is currently used for the 38.6-40.0 GHz band. This is important to equipment manufacturers, since it results in equipment commonality between the 37.0-38.4 GHz and 38.6-40.0 GHz bands, and will translate into lower equipment costs. It will also consolidate a North American 700 MHz transmit/receive spacing, and will counterbalance the ETSI 1.26 GHz spacing.

Furthermore, to maintain consistency with the 38.6-40.0 GHz band, we propose to use a 50 MHz channeling plan similar to the plan now used in that band.

In addition, we propose that the 38.4-38.6 GHz band be channelized into unpaired 50 MHz channels. We envision these used for video surveillance links and other one-way applications. In addition, Parts 74 and 78 should be amended to include 38.4-38.6 GHz, so that these channels can be used for mobile and portable video links by broadcasters and cable operators. Licenses on these channels may not need to be exclusive to a single licensee within the area of license, but may be shared among numerous licensees using appropriate coordination procedures.

Consequently, Sections 21.701(j) and 94.65 should be amended to include the following channel plan:

Paired Channels

Channel Group A		Channel Group B	
Channel #	Frequency Band Limits (MHz)	Channel #	Frequency Band Limits (MHz)
15-A	37000-37050	15-B	37700-37750
16-A	37050-37100	16-B	37750-37800
...	...	...	...
27-A	37600-37650	27-B	38300-38350
28-A	37650-37700	28-B	38350-38400

Unpaired Channels

29	38400-38450
30	38450-38500
31	38500-38550
32	38550-38600

While licensees should be generally free to subchannelize their 50 MHz pair according to marketplace needs, we recommend that licensees be required to subchannelize their assigned pair of channels based on an underlying grid of 1.25 MHz subchannels. That is, licensees should assign subchannel usage according to a (n x 1.25 MHz) subchannel plan. This will ease frequency coordination at channel edges and at geographic boundaries. It will also permit the use of standardized frequency synthesizers in the equipment, thereby resulting in lower equipment costs. This same 1.25 MHz grid should also be required for 38.6-40.0 GHz.

This grid may be specified as follows:

Group A: F(14+M,N) = 36949.375 + 50M + 1.25N
Group B: F(14+M,N) = 37649.375 + 50M + 1.25N

where 14+M is the channel # in a specific group (M = 1 to 14);
N is the subchannel # of the 1.25 MHz grid in that specific channel (N = 1 to 40).
Unpaired channels would use the Group B formula with M = 15 to 18.

The grid in the 38.6-40.0 GHz band may be specified as follows:

Group A: F(M,N) = 38549.375 + 50M + 1.25N
Group B: F(M,N) = 39249.375 + 50M + 1.25N
where M = 1 to 14, N = 1 to 40.

The Commission may want to adopt a rule that requires licensees to choose subchannel frequencies so as to minimize possibilities for adjacent channel interference between licensees. For example, DS3 and STS-1 radios should operate at the center of any 50 MHz channel assignment. We propose the following rule: "Licensees should assign subchannel usage so as to maximize the capacity of the channel assigned to them, and minimize the likelihood of interference to adjacent channel licensees." We expect that future work by the Section on revisions of Bulletin 10F will address such interference matters. The same rule should apply to the 38.6-40.0 GHz band.

We propose that Sections 21.101 and 94.67 be amended to show a frequency tolerance of 0.001% rather than 0.03% for both 37.0-38.6 GHz and for 38.6-40.0 GHz. This increase in stability maximizes the use of each channel. It is well within the current state of the art at these frequencies and can be achieved without significant cost impact.

We propose that Sections 21.108 and 94.75 be amended so that only Category A antennas be permitted. These high performance antennas are available at little or no price difference compared to Category B antennas, and they have superior radiation patterns that enhance frequency reuse capability.

The current Part 21 power and EIRP limits (10 watts, +50 dBW) do not need to be changed, but Part 94 (Section 94.73) needs to be amended to be consistent with Part 21. The Part 94 change should also cover the 38.6-40.0 GHz band.

The current licensing rules are unclear about when a licensee is entitled to apply for additional channels. We propose that the following rule (derived from the current rule in Section 21.502) be adopted. "A licensee may apply for an additional channel pair in its service area only when it is operating its previously authorized channel(s) at or near the expected capacity."

The current licensing plan for 38.6-40.0 GHz allows the applicant to specify any rectangular area as its service area for licensing. This could result in a daisy-chain effect in determining whether applications are mutually exclusive. The Commission should consider whether to grant licenses for Basic Trading Areas, rather than allowing applicants to specify any arbitrary service areas. This is also better adapted to the needs for PCS infrastructure.

International Trade Considerations

Adoption of the proposed rules will benefit the United States in international trade. The major manufacturers of 38 GHz microwave radios are United States companies. In other parts of the world, the 37.0-38.6 GHz band is already used for fixed point-to-point communications. (Partly for the reason of international commonality, we do not seek at this time to add the 36.0-37.0 GHz band to our request for a channel plan, even though it is allocated for Fixed service.) The proposed action will stimulate the U.S. market for such equipment, and will allow U.S. companies to expand their market. This, in turn, will allow them to retain their competitive edge in world markets.

Need for Additional Fixed Point-to-Point Spectrum

The Section believes that there is a legitimate and continuing need for additional fixed point-to-point radio spectrum between the 23 GHz band and the 38 GHz band.[1] The section believes that the adoption of a channel plan for the 37.0-38.6 GHz band, coupled with the present 23 GHz band and a preserved access to the 28 GHz band will allow for the successful implementation of

[1] In an August 22, 1994 letter to Susan Magnotti (Designated FCC Official, 28 GHz Negotiated Rulemaking Committee), the Section expressed the importance of preserving access to the 27.5-29.5 GHz band for terrestrial fixed systems. Because of its technical characteristics, its strong export potential and its correspondence with recent U.S. technology developments, the 28 GHz band has witnessed an increase in global utilization and is seen as a perfect complement to an extended 38 GHz band.

PCS and of the NII in the U.S. In fact, failure to make sufficient spectrum available above 20 GHz could, in our opinion, hinder the successful implementation of these emerging technologies.

Need for Expedited Action

We ask that the Commission act on this petition quickly, so as to make available the 37.0-38.6 GHz spectrum to PCS operators in time for them to use it in designing their systems. Ideally, this band should be available for licensing at the same time that broadband PCS licenses are awarded. Because of the recent rush of applications for the 38.6-40.0 GHz band, none of the 14 channel pairs in that band appears to be available for licensing in the major markets. In the absence of expedited action to make the 37.0-38.6 GHz band available to them, PCS licensees will need to seek individual licenses in the 18 GHz and 23 GHz band to interconnect their thousands of cell sites. The Commission's administrative processes could be overwhelmed by such an avalanche of individual license applications. It would surely delay the availability of PCS services to the public. Such an anticipated delay could even affect the bidding prices in the PCS auctions. For these reasons, we ask the Commission to move as promptly as is permissible to adopt final rules.

Conclusion

Adoption of the proposed rules will serve the public interest by providing additional radio spectrum capacity to satisfy short haul communications needs. It will promote the interests of the United States in international trade. It will allow the use of radio spectrum that has heretofore lain fallow. In light of these considerations, the Section urges the Commission to adopt the proposed channel plan and technical rules for the 37.0-38.6 GHz band.

Respectfully submitted,

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9/9/94